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VILLAGES ROUND DUBLIN.

Although the villages surrounding our city have little in their appearance to attract particular attention, still as lying in the immediate vicinity of the metropolis, we may suppose them to have an interest, not only to the citizen strolling through them in his morning or evening rambles, but to the stranger who, coming from a distance, may be anxious to visit and view our immediate suburbs. The three villages represented in our present number lie to the south of the city.

HAROLD'S CROSS,

Scarcely one mile from the Castle, in the direction of the Grand Canal, is a pleasant village. The air in this neighbourhood has long been considered particularly favourable to invalids; and the village has, therefore, been much frequented by persons in a delicate state of health.

RATHFARNHAM

Lies about three miles south from the metropolis. The neat little church, with its handsome spire, gives it rather a pleasing appearance. But the Castle, which was at one time esteemed a magnificent building, with a fine collection of pictures, and having extensive gardens and pleasure-grounds, containing many foreign and scarce plants, is now converted into an extensive *dairy!—Sic transit gloria mundi.*

SIMPLE SCIENCE.

ON CALORIC.

By the term Caloric is meant that power, which existing in bodies in certain quantities, overcomes the cohesion of their constituent particles, and thus occasions their expansion;—it is it also that causes the sensation denominated heat in animals, as its abstraction does that of cold; hence it would appear, that with respect to caloric, the term cold, is a negative expression. It was the opinion of the ancient philosophers, that the cause of heat was an extremely subtile fluid, pervading all nature, which opinion, was universally adopted until the time of Bacon, when that eminent man observing that an increase of temperature always attends those circumstances, viz. mechanical friction and percussion, which tend to excite a vibratory motion in the particles of bodies, conjectured that all the phenomena of heat might be dependent on a mere condition or affection of matter, that is, a vibratory motion of its particles; this hypothesis was also supported by many other celebrated writers, particularly by Newton, yet notwithstanding the acquiescence with which every opinion of the last mentioned illustrious individual should be received, and the respect justly due to so great a name, the theory of the ancients was revived, and at this day all the phenomena of heat are believed to depend on the presence of an elastic and imponderable fluid. It would far exceed the limits of this article were we to follow those philosophers in their inquiries regarding the actual existence of a matter of heat, and it would be moreover nearly useless, for caloric, however unknown in its nature, is not so in its effects, and it is to attain a knowledge of these, that strict philosophy should aim.

As sensation varies in different individuals, and depends much on the relation between the temperature of the sentient organ and that of the body felt, it is evident that it cannot be an adequate measure of the absolute quantity of caloric in any body. Sensations are also much influenced by immediately preceding impressions; thus if one hand is immersed in a vessel containing pounded ice, while the other is plunged in one containing hot water, and both hands be subsequently placed in water at the ordinary temperature; this, to the hand which was immersed in the ice, will give the feeling of heat, while to the hand which was in the warm water, it will give the sensation of cold; now, if in this case we were to depend on our sensations, we should pronounce the water at the ordinary temperature, to be both hot and cold at the same time, which is manifestly absurd. It was circumstances of this kind that gave rise to the invention, and construction of the thermometer, an instrument by which the difficulties, and erroneous conclusions arising from sensation are obviated, and the absolute quantity of caloric existing in bodies, ascertained with a degree of exactness hitherto unknown. The effects of the action of caloric on bodies, are enlargement of volume, fluidity, and vaporization; also when it acts with intensity on certain substances, another effect is produced, termed ignition. It would appear that during this last mentioned change the red rays only of the spectrum are at first given out; but gradually, and as the temperature is still more augmented, all those rays whose union produces white light are emitted, constituting what is called the stage of incandescence. With the nature of this phenomena we are entirely unacquainted; we are not able to perceive the connection between a certain degree of temperature, and the emission of one kind of light, rather than another. It is only solid bodies that suffer this change; gases do not appear susceptible of it. It takes place at about 800° of Fahrenheit's scale. When the temperature of a body is raised to a certain degree, its volume is enlarged in every direction, which is owing to the repulsive agency of caloric increasing the distance between its constituent particles; different bodies suffer this change at various temperatures, some (as among the metals lead and zinc) undergoing it at a comparatively low degree, while others (such as palladium and platina,) require an extremely high degree. The expansion of a solid body may be illustrated in the following manner. Let an iron bar be placed horizontally, having one of its ends immovably fixed, and the other connected with wheel work, which turns an index round a graduated circle, then on the application of heat, which may be effected by placing a train of lighted tapers underneath the bar, tne longitudinal expansion of which will after a few moments be rendered evident by the motion of the index, and the number of degrees described by the index will be a true measure of the expansibility of the body, from a given temperature. It is upon this principle that we are enabled to explain the cracking of glass vessels containing hot fluids; thus when boiling water is poured into a glass vessel, the innermost layer or surface of the glass becomes heated and expands; this expansion is resisted by the outermost layer of the glass, which, still retaining its ordinary temperature and dimensions, does not yield sufficiently soon to the increasing volume of the innermost, and consequently cracks; hence, the thinner the glass is the less danger is there of this accident occurring; for in this case, both surfaces or layers, are heated in nearly the same time, and consequently expansion must proceed uniformly in both: thus Florence flasks and other vessels of thin glass, are little liable to crack under these circumstances. We have thus seen how an enlargement of volume accompanies an increase of temperature. If the temperature is raised still higher, the body is at last converted into the fluid form, and in this form will it remain as long as that certain temperature, its cause, is continued; thus ice, at ordinary temperatures, is converted into water, and the most refractory metals fused by a certain degree of heat. Quicksilver, which in Siberia, and other high latitudes, exists as a permanent solid, is in our comparatively warmer climates a permanent fluid. The change from mere expansion to fluidity, does not appear to depend on the greater increase of distance between the constituent particles of bodies; it seems rather to be owing to a new arrangement of these particles, with regard to each other—an arrangement in which they are allowed a greater freedom of motion. When the temperature is augmented beyond that point which is necessary to the existence of a body in the fluid form, the distance between its constituent particles is further increased, it becomes a gas or vapour, and is highly elastic; thus water at 212 becomes steam—quicksilver undergoes this change at 656°; and either at a few degrees above the ordinary temperature. We have now seen that the state of aggregation of bodies, viz. whether they shall exist as solids, fluids, or gases, is entirely dependent on the temperature to which they are exposed. The diffusion of caloric takes place in two different ways, by slow communication, and by radication; the heat we feel on touching a heated body, is occasioned by slow communication, while that experienced from a similar body, not in immediate contact with us, is the result of radiation, in which case the calorific rays, darted from the surface of the heated body, produce the effect. When a body, at a high temperature is placed in contact with one at a lower, a portion of the redundant caloric in the one, is gradually imparted to the contiguous surface of the other; this surface becomes heated, and communicates a portion of its excess of caloric to the next layer, and this again to the next, and so on progressively, until both bodies arrive at an equal temperature. Though caloric has this tendency to pervade or diffuse itself through all bodies, until it has gained an equilibrium, yet it does not pervade all bodies with equal facility; thus if a rod of iron, and one of glass, are held in the hands, the extremities of each being placed in the fire, so rapidly will the heat be conducted by the iron, that the hand will soon be unable to retain it, while the glass may be held for any length of time; this faculty which bodies have of receiving caloric, and transmitting it, is called "their conducting power," and is, generally speaking, in proportion to their density; thus the metals, which are all very dense substances, conduct it with great rapidity; while porous bodies, such as clay, wood, &c. have scarce any conducting power whatever; this is owing to the interstices of these bodies containing much air, which is an exceedingly bad conductor of caloric. From some interesting experiments made by Count Rumford, with a view of ascertaining the relative warmth of several articles of clothing, we learn that linen has the greatest, and fur and woollen-cloth the least conducting power; hence linen is ill-adapted to maintain the warmth of the body, from the strong tendency it has to absorb its heat, and transmit it to the external air, while woollen articles, absorbing scarce any, are well adapted for this purpose. This difference in the conducting powers of bodies, occasions the difference in the sensation either of heat or cold which these various bodies may produce in us, notwithstanding the thermometer all the while indicates them to be at the same temperature; thus on a cold day, a piece of iron, from its rapidity of abstracting caloric from the sentient organ, feels very much colder than a piece of wood, which scarce abstracts any at all.

The other way in which caloric diffuses itself, is by radication, during which this subtile fluid is darted in right lines, and with immense velocity from the surface of the heated body. This is termed *radiant* caloric, and is, like light, capable of being reflected; which may be illustrated by the following experiment. Let a red hot iron ball be placed in the focus of a concave metallic mirror, and opposite to this, and at the distance of eight or ten feet, another similar mirror be placed, having the bulb of a delicate air thermometer in its focus; the radiant caloric darted from the heated ball, will be thrown by the mirror in whose focus it is placed, upon the surface of the opposite one, in whose focus it will be again concentrated, as will appear by the rising of the thermometer, and if instead of the iron ball, a piece of burning charcoal is used, the heat radiated will be such as to set on fire an inflammable body. An experiment nearly similar to this, and attended with a similar result being capable of being performed in vacuo, almost demonstrates the materiality of caloric. Bodies differ much in their power of radiating caloric, the colour of their surfaces having great influence on them in this respect; thus boiling water will be cooled nearly twice as soon in a tin vessel whose sides are blackened, than it will be in one whose sides are clear and polished—the heat being more rapidly abstracted from the water and radiated by the coloured than by the uncoloured surface. It also appears that those bodies, whose tendency to radiate caloric is greatest, are also most disposed to absorb it when thrown on them. An experiment illustrative of this was made by the celebrated Franklin: on a clear winter day, he placed pieces of cloth of different colours, as black, blue, brown, and white, on the surface of the snow; after some time he found that the black had sunk the deepest, owing to its greater tendency to absorb the radiant heat of the sun, next the blue, next to this the brown, and the white had scarce sunk at all; hence, light-coloured clothes are best adapted to be worn in tropical climates, and during the summer season; hence if, in the experiment with the mirrors, their reflecting faces be blackened over, there will be no effect produced on the thermometer, for they will absorb all the heat that falls on them. The scources of caloric are, the solar rays, electricity and galvanism, percussion and friction, condensation and chemical action. By the mere exposure to the action of the solar rays, the thermometer is frequently raised to near 200°. But when these rays are concentrated by a lens, or in the focus of a powerful burning mirror, so intense is the heat produced, that most of the metals and earths have been melted. Electricity is also capable of exciting a powerful and sudden heat; but still more intense is the heat arising from galvanism. By the discharge from a galvanic battery, all the earths have been fused, and the most refractory metals melted, burned, and dissipated into vapour. Friction and percussion, as scources of heat, are well known; an instance of the former, is where two pieces of hard dry wood rubbed forcibly and rapidly against each other, become so much heated, as to take fire. Of heat produced by percussion, there are many instances; one is where an iron bar hammered repeatedly on an anvil, is at last raised to a red heat. The striking a flint with steel, and the increased temperature attending it, is also another and well-known example of percussion; in this case particles of steel are struck off in a state of ignition, which is probably owing to their suffering combustion with the air of the atmosphere, as they are not ignited when struck off in vacuo. By the condensation of bodies, particularly of the gases, a large quantity of the latent caloric which was necessary to maintain them in their expanded state, is evolved; thus a temperature capable of igniting a body is produced, when a gas is forcibly compressed by a piston in a condensing syringe. Chemical action is frequently productive of great heat. In chemical combination the capacity of the compound for caloric, is generally less than the mean capacity of its constituents, while its density becomes generally greater; consequently a great portion of the combined caloric contained by its constituents, is set free. Thus the capacity of sulphuric acid is 429, that of water being 1000; if equal parts of this acid and water are mixed, the temperature of the compound is not the mean between them, or 714 as it should be, but it is found to be only 605, which is much less than the mean; hence from this diminution of capacity a quantity of caloric is evolved, which is evident by the mixture becoming warm.

As connected with this subject, it should appear incumbent on us to make a few observations on the scources, and nature of the production of cold; but our limits (already too much transgressed) will not allow us to proceed farther. G——Y.

ANECDOTE OF FAULKNER THE PRINTER.

Mr. Sheridan obtained an Irish act of Parliament, protecting him from arrests, on account of his debts in Dublin, amounting to sixteen hundred pounds; but having, the following season, saved eight hundred pounds, he gave notice that he was ready to pay his creditors ten shillings in the pound, and desired them to call on him for that purpose, with an account of their respective demands. Mr. Faulkner, the printer of one of the Dublin papers, was one of them: this gentleman told Mr. Sheridan, he would not trouble him with his demand till he dined with him: Mr. Sheridan accordingly called on Mr. Faulkner, who, after dinner, put a sealed paper into his hand, which he told him contained his demand, at the same time requesting Mr. Sheridan to examine it at his leisure at home. When he came home, he found, under seal, a bond for £200, due to Mr. Faulkner, cancelled, together with a receipt in full of a book debt, to the extent of £100. Whether is the conduct of the actor or printer the more generous and laudable?

ANECDOTE OF THE EARL OF DESMOND.

In the reign of Elizabeth, Gerald, earl of Desmond, was defeated, wounded, and taken prisoner, by his great rival, Butler, Earl of Ormond, with whom he was always at war. As the Ormondians were conveying him from the field, stretched upon a bier, his supporters, with a natural triumph, exclaimed, "Where is now the Earl of Desmond?" "Where," returned with energy the wounded chief—"Where, but in his proper place, on the necks of the Butlers."